

PART C3: SCOPE OF WORKS

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PART C3

SERVICE INFORMATION

MAINTENANCE OF RAILWAY TRACK WITH ON-TRACK MACHINERY

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MAINTENANCE OF RAILWAY TRACK WITH ON-TRACK MACHINERY

3.1. EMPLOYERS OBJECTIVE

Permanent track, Country-wide are to be maintained by mechanized means and or on-track machinery to ensure safe, reliability and stability of permanent way infrastructure.

Any clause in this specification contradictory to requirements elsewhere in this contract except for particular specifications part **C3.24.2**, shall take preference.

Any reference in this Specification to “Contractor” will imply the Principal Machine Contractor, any subcontractor appointed by the Principal contractor for support of the contractor.

Where reference is made to any output which may be subcontracted by the principal contractor or Labour controlled by the principal contractor, this will also imply to the control of the output, performance or labour from a nominated sub contractor where and if such a nominated subcontractor is separately appointed for support service for a principal machine contractor.

3.2 DESCRIPTION OF THE WORK

The contract covers the maintenance of permanent track by the Contractor with on-track machinery, which he shall provide, maintain and operate subject to the terms of the succeeding clauses, and the specifications and schedules embodied in the contract.

3.3 EXTENT OF THE WORK

The Contractor would be required to maintain the permanent track anywhere in the Country on any lines owned or maintained by Transnet Freight Rail for the period as specified in the Contract Data. Maintenance of permanent track will be required on open lines, tunnels, platform lines, and loop and yard lines. It will be required that all different types of activities are performed as prescribed in the various particular specifications.

3.4 LOCATION OF THE WORK

3.4.1 The Technical Officer where the Work shall be performed. Maintenance of permanent track will be required on open lines, tunnels, platform lines, and loop and yard lines. This shall include, but not limited to, the Coalline, Ore line, Natal mainline, Western mainline, Eastern mainline, Cape mainline, Port Elizabeth mainline, Beitbridge corridor, and any branch line.

3.4.2 The Contractor may be required to work in areas where varying degrees and types of security situations are prevailing such as may occur in remote rural areas through to densely populated metropolitan areas. This could require the contractor to work inside any of the Infrastructure Depot areas at any time of the year for any period of time.

3.4.3 The Technical Officer shall make the necessary arrangements to move the machinery by rail from one work site to another, and shall give the Contractor written notice of the date and time of departure. Major movements will be planned and the time allowed should be a minimum of 14 days or such shorter period as agreed.

3.4.4 Any delay to an announced move caused by the Contractor will render the machinery non-available for the period of such delay, excluding overnight stops.

3.5 CARE OF MATERIAL SUPPLIED BY TRANSNET FREIGHT RAIL

3.5.1 Any material supplied by Transnet Freight Rail shall be used in the most economical way, and the Contractor shall take all reasonable care to prevent loss or damage thereof. Any material lost or damaged through negligence on the part of the Contractor or his employees shall either be made good by the Contractor or Transnet Freight Rail will replace it.

3.5.2 The value of the material replaced by Transnet Freight Rail, including the cost of transport at normal tariffs applicable to the public, will be deducted from any money due to the Contractor or recovered in any other way.

3.5 PROPERTY PROVIDED BY TRANSNET FREIGHT RAIL

Transnet Freight Rail will provide the following free of charge: -

3.6.1 Water to operate the machinery, where available. The quality of water cannot be guaranteed.

3.6.2 Where available, at campsites as in clause 3.6.1, water for drinking and domestic purposes and hot water for ablutions.

3.6.3 Free traffic consignment notes for the conveyance by rail from one area of operation to another or from the Contractor's workshop or depot to the area of operation and vice versa will be issued for the machine (whether under own power, coupled to a train or loaded onto a railway truck), spares, caravans used with the machine and either of one spares trailer or one light delivery vehicle.

3.6.4 Transnet Freight Rail will be responsible for the safety of the machinery in so far as train working is concerned and will provide a qualified employee for each machine or group of machines, who will be in charge and who will -

- travel in the cab of the machinery whenever it moves as a train outside occupation areas.
- arrange protection for and supervise the operation of the machinery within the zone of protection, whether it is working, moving or standing idle.
- supervise all on-tracking and off-tracking operations and ensure that the machinery is made secure when parked at the staging point.
- The Contractor shall appoint one suitably qualified person as his representative at each occupation.

- 3.6.5 Before work is commenced, the Technical Officers Deputy's will enter in the work book the approximate positions of underground or hidden electrical conductors that may affect, or be affected by, the Work to be done under the Contract, or alternatively, endorse in the work book that no such conductors exist.
- 3.6.6 Nothing contained here in shall detract from the Contractor's obligation to exercise care in all respects in carrying out his duties under the Contract.
- 3.6.7 Any rail wagons that may be provided by Transnet Freight Rail will provide in terms of any specific requirement as specified I the Particular Specifications C3.24.2

3.7 TO BE PROVIDED BY THE CONTRACTOR

- 3.7.1 Except where otherwise specified the Contractor shall at his own cost provide all machinery, labour, transport, consumable stores, equipment, tools, services, materials, spare parts and ingredients of every description required for the performance and completion of his contractual obligations.
- 3.7.2 The Contractor shall provide and deliver to the place of Work all fuels and water required for the machine operations.
- 3.7.3 The Contractor shall maintain and operate the machinery, direct his own personnel and perform all work required.
- 3.7.4 During track occupations, the Contractor shall ensure that sufficient mechanics, operators and labour are present to ensure efficient operation of the machinery.
- 3.7.5 At least one qualified and experienced mechanic shall be in attendance at all times during track occupations and when the machinery travels as a train.
- 3.7.6 The Contractor shall appoint one suitably qualified person as his representative at each occupation.
- 3.7.7 The Contractor and the Technical Officer shall notify each other in writing of the names of their representatives who will be present during track occupations. These, as well as any changes in the personnel, shall be recorded in the workbook.
- 3.7.8 Failure to comply with the provisions of 3.7.1 to 3.7.7 shall render the machinery non-available.

3.8 MACHINERY AND EQUIPMENT REQUIRED

- 3.8.1 Mechanical and motive aspects
- 3.8.1.1 All machinery provided by the Contractor shall be in good mechanical condition and he shall maintain the machinery in good mechanical condition for the duration of the Contract.

- 3.8.1.2 Axle loads shall not exceed 20 tons.
- 3.8.1.3 The machine shall be self-propelled.
- 3.8.1.4 The machine shall have service brakes and independent emergency brakes capable of providing minimum retardation of 12,5% and 6% of gravitational acceleration respectively, on dry rail.
- 3.8.1.5 At the start of each occupation the Contractor shall, in the presence of the Technical Officer's Deputy's, perform the daily tests laid down by the Technical Officer. The brakes shall be briefly applied at low speed when traveling on level track or upgrade. If in the opinion of the Technical Officer's Deputy the brakes do not function satisfactorily, the machinery shall be removed immediately to a staging point. Machinery staged due to defective brakes will be regarded as non-available.
- 3.8.1.6 At approximately one-month intervals, the Technical Officers Deputy will test the brakes with a brake efficiency test meter and record the results in the workbook.
- 3.8.1.7 The machine shall actuate all signalling equipment used by Transnet Freight Rail for traffic control.
- 3.8.1.8 Regular checks shall be made for pressure loss on brake cylinders and circuits, wear and set of brake shoes, proper functioning of sirens and mechanical locks on hydraulic components.
- 3.8.1.9 The machine shall have an adequate lighting system for operation at night. Lights shall be provided for traveling in both forward and reverse directions. The trailing end headlights and leading end red lights shall not be switched on during motion.
- 3.8.1.10 The machine shall be capable of being hauled in both directions as the last vehicle of a train if required to clear the section after breakdown. The Contractor shall provide towing equipment.
- 3.8.1.11 Where specified, machinery shall have off-tracking equipment suitable for use on either of the off-track stand types shown in Annexure D. Should these stands not be suitable, Transnet Freight Rail will construct stands to the Contractor's requirements and at his cost, subject to the particulars of such requirements being submitted with his tender.
- 3.8.2 Wheel flanges, tyres and axles
- 3.8.2.1 The condition of the flanges and treads of wheels of all machines shall be carefully examined. Should any appear to be excessively worn, they shall be tested by means of the wheel flange thickness and skid limit gauge and the tyre wear limit gauge.

3.8.2.2 Wheels shall comply with the following requirements:

- The thickness of a flange shall not be less than the minimum indicated by the wheel flange thickness gauge.
- Hollow wear on the tread shall not exceed 6mm.
- The flange height shall not exceed 35mm.
- The angle of the flange shall not be less than 15° and the radius at the tip of the flange not less than 6mm.

3.8.2.3 Axles shall comply with the following requirements:

- Ultrasonic testing: to specifications laid down by Transnet Freight Rail, done for new axles and every time an axle is replaced after fitting new wheels.
- Distance between wheel flanges: 988mm ± 2mm.

3.8.3 Fuelling and maintenance

3.8.3.1 The Contractor shall not re-fuel, service or repair the machinery during track occupations.

3.8.3.2 The Contractor may repair and adjust the machinery during stoppages caused by Transnet Freight Rail. The machinery will be regarded as available during such repairs or adjustments, provided that the required working of the machine is not delayed thereby.

3.8.4 Recording instruments

3.8.4.1 Each machine shall be fitted with an approved tacho-graph, a mechanically operated event recorder and a speedometer.

3.8.4.2 The Contractor shall be responsible for inserting recording cards in the tacho-graph and event recorders, and for synchronising these instruments.

3.8.4.3 The Technical Officers Deputy will be responsible for setting the event recorder.

3.8.4.4 The Technical Officers Deputy will test the tacho-graph and event recorders at least once a week in the presence of the Contractor. The Contractor shall either repair or replace any device, which is inaccurate by more than 1%. Failure to repair or replace an inaccurate device within 72 hours of the test will render the machinery non-available.

3.8.4.5 Should the tacho-graph or the event recorder break down, the Technical Officers Deputy will keep a complete written record of the starting and ending times of all events occurring during a track occupation. The Contractor shall sign this record if he agrees, and if he disagrees, he shall indicate on the record the reasons for the disagreement and then sign the document. Such disagreement shall be settled by negotiation between the Technical Officer and the Contractor.

3.8.5 Radio equipment

- 3.8.5.1 During track occupations the Contractor shall provide a cellular telephone for communication between the Work place and the controlling office on either side of the Work place or the area CTC office.

The cellphone for the official use of Transnet Freight Rail shall be provided with a talk time contract of not less than 500 talk minutes per month. If this allowed talk time is exceeded, Transnet Freight Rail shall pay the excess. This excess shall only be paid after all previous monthly account credits have been brought into consideration. The Technical Officers Deputy shall certify detail account excess.

This Cellphone shall also be available for the use of the Transnet Freight Rail signal's or electrical technician involved if required for work directly related to the tamping work. Use of this phone by any other Transnet Freight Rail official than the Track inspector with the machine may only be with his permission. The Track inspector with the machine shall be responsible for controlling the number of calls on this phone.

- 3.8.5.2 The Contractor shall provide and maintain walkie-talkie radio transceivers with a minimum range of 5km in open country. The Technical Officer, in consultation with the Contractor, will allocate suitable frequencies within the 450MHz to 470MHz band for configuration of the radio equipment. The Contractor will be given seven day's written notice when additional radios are required.
- 3.8.5.3 All of the above-mentioned radio equipment shall operate on 12,5kHz channel spacing, and shall comply with specification SABS-1069.
- 3.8.5.4 The Contractor may operate the radio equipment only for trackside protection. The use of the allocated frequencies must be terminated when the contract expires.
- 3.8.5.5 When walkie-talkie communication fails due to faulty equipment, the machinery will be deemed as non-available.
- 3.8.5.6 When radio and or cellular telephone communication between the place of Work and the controlling stations or the protection flagmen fails, the Contractor shall remove the machinery from the track as soon as possible.
- 3.8.5.7 Transnet Freight Rail will provide, install and maintain a radio in the cab of the machine for train control purposes. The Contractor shall indicate the position in which the radio shall be installed, and provide a suitable power supply point for the radio equipment when requested. The machine will not be allowed to operate without this radio.

3.8.6 Warning devices

- 3.8.6.1 The machine shall be fitted with a hooter for use during traveling.

- 3.8.6.2 The machine shall be fitted with a separate warning system used solely for and on the approach of a train. The pitch and intensity shall make it discernable from other sounding devices and easily heard above the working of the machine anywhere within 100m from the machine. The warning system shall be activated by an appointed employee of the Contractor.
- 3.8.6.3 The Contractor's appointed employee shall be in continuous radio communication with Transnet's protection flagmen who will warn the Contractor's employee of approaching trains on adjacent lines.
- 3.8.6.4 A rotating amber flashing light shall be fitted to the top of the machine's cab, for use during travel.

3.8.7 Machinery Specifications

Machinery shall be suitable for use under the following conditions and dimensional limitations: -

- 3.8.7.1 Vehicle gauge: 1,065mm gauge track shown in Annexure 2 (Sht 1 of 2). Should the machinery exceed the vehicle gauge in any respect, this shall be clearly indicated by the Contractor by means of suitable drawings.
- 3.8.7.2 Track gauge: nominal 1,065mm, with a range of - 10mm to + 45mm.
- 3.8.7.3 Minimum structure gauges: as shown in Annexure 1 (Sht 1, 2, 3 and 5 of 5).
- 3.8.7.4 Single lines or multiple lines with a minimum distance of 4m between track centres.
- 3.8.7.5 Maximum track gradient: 1 in 30.
- 3.8.7.6 Minimum curve radius: 125m.
- 3.8.7.7 Work place altitude range: 0 to 2,000m above sea level.
- 3.8.7.8 Ambient temperature range: - 5°C to + 50°C.
- 3.8.7.9 Mass of rail: 60kg/m, 57kg/m, 48kg/m, 40kg/m, 30kg/m or 22kg/m.
- 3.8.7.10 Maximum mass per sleeper: Sets - 750kg; other - 300kg.
- 3.8.7.11 Types of sleepers in track: timber, steel, monolithic or tie-bar concrete.
- 3.8.7.12 Sleeper-spacing: 500mm to 900mm.

3.8.8 Unknown / Alternative / Substitute Machines

- 3.8.8.1 Transnet Freight Rail will, in the case where alternative or substitute machines or machines with characteristics which are unknown to Transnet Freight Rail are offered by Tenderers or the Contractor, require that such machines, before they are accepted, be subjected to trials under the prevailing working conditions of the contract area(s) to demonstrate their

compliance with the contract specifications. Machines that do not comply with the specifications will not be accepted.

3.9 COMPLIANCE WITH STANDARDS OF WORKMANSHIP AND ACCURACY

3.9.1 The Contractor shall work to the track dimensions required by the Technical Officers Deputy. These dimensions shall either be marked with chalk marks on the sleepers by the measurement gang of the contractor or by means of the approved measurement system operated on the high speed machines.

3.9.2 The Contractor shall continuously monitor and evaluate measurements of the track and shall ensure compliance with the specified standards of workmanship and accuracy.

3.9.3 Where, in the opinion of the Contractor, the condition of the track or any site condition is such that the specified performance standards cannot be achieved, he should record all relevant information before and after working in conjunction with the Technical Officers Deputy. The Technical Officers Deputy may, if he concurs with the Contractor's contentions, adapt the specified standards of workmanship and conformance to suit the track and/or site conditions.

3.10 PROCUREMENT

3.10.1 Definitions and interpretation

In this Contract, unless inconsistent with the context: -

ACTUAL PREPARATION TIME (T_p) means the period between the actual commencement of the track occupation and the actual commencement of the work by the machinery, plus the period of time between the actual end of the work by the machinery and the actual time when the machinery is secured at its staging point, clear of the occupied track. Preparation time excludes all periods of delay by Transnet Freight Rail.

ANNUAL HOLIDAYS means the annual holiday with duration of 15 consecutive working days plus statutory public holidays, Saturdays and Sundays that may fall within in this period, when no Work will be performed by the Contractor.

AVAILABLE means when required to do work, a machine is able to produce work to the standards specified.

BREAKDOWN TIME (T_b) means all periods during which the machinery is non-available.

CANT means the difference in elevation between the running surfaces of the two rails.

CURVE LOCATION POINTS means the four points, which locate the transitions of the curve, or the two points, which locate the circular curve, where no transitions are provided.

DAY shall mean a calendar day. Where a specific number of days is allowed in the Contract for the performance of any act or is stipulated for the extinction of any right or the duration of any event or circumstance the days between the commencement and last day of the Annual Holidays (both days included) and the day from which the period is stated or agreed to commence, shall be excluded from the calculation of the number of days concerned.

DOUBLE SHIFT WORKING means the working of two consecutive shifts of 8 hours, which may each be non-continuous and scheduled at any times during a 24 hour day.

EXECUTIVE OFFICER means the person appointed by Transnet Freight Rail from time to time as the EXECUTIVE OFFICER to act according to the rights, powers held by, and obligations placed upon him in terms of the Contract. In terms of this contract the EXECUTIVE OFFICER is the employer representative.

FREE-ON-RAIL implies allowing the contractor to move an On Track machine from one track destination to another with no track usage cost levied on the contractor. Transnet provides the right of passage and the pilot required for the machine to the contractor, without cost and at times whereby such a passage and pilot can be made available by Transnet. Free-on-rail passage will normally be allowed for at the start of a contract to deliver a machine to the starting place of work and at the end of the contract to return a machine to the contractor's depot if required by the contractor. Free-on-Rail movement of a machine during a contract for major workshop repairs required of a machine may only occur if specifically agreed to by the Project Manager. Such a move shall then occur in the contractor's time.

IDLE TIME (T_i) means all periods of 15 consecutive days or longer during which Transnet Freight Rail does not require work to be performed by the machinery. This excludes the stoppage of work during the annual holiday.

JOINT ASSEMBLIES means all types of joints, including flash-butt and thermit welded, fishplate and block-joints.

LINE means the maximum rate of deviation of the running edge of one rail from a straight line between two points on the same rail of tangent track. Measurements will be taken 15mm below the top of the rail, against the gauge side of the rail used by the machine as a datum for aligning.

MACHINERY means the on-track machinery provided complete with all fittings, accessories and ancillary equipment including trailers, caravans and spare parts, as may be required to comply with the requirements of the specifications.

MAXIMUM OCCUPATION TIME (T_{om}) means the total occupation time, non-continuous, on a normal working day, not exceeding a total net period stated in the particular specifications.

MONTH means the continuous period from the first day to the last day of any calendar month, both days included.

MONTHLY WORKING TIME (Twm) means the targeted average monthly working time.

MOVING TIME (Tm) means the period required to move the machinery from work site to work site as a train, as part of or on a train. Moving time will commence at the announced time of departure and will end when the staging point at the new work site is reached. Periods of overnight stops when the machinery is traveling as a train, as part of or on a train will be excluded from moving time. Moving time will be included in occupation time for payment purposes.

NIGHT SHIFT ALLOWANCE means an allowance paid for any time worked between 19h00 and 05h00 (Night shift allowance is additional to either overtime or normal shift time, if applicable)

NON-AVAILABLE means when required to do work, the machinery or the operation thereof is unsafe, or the machinery is not able to produce work to the standards specified, due to any reason other than a stoppage of work caused by Transnet Freight Rail.

NORMAL WORKING DAY means a total shift of 8 hours, which may be non-continuous, out of every 24 hours for 5 consecutive days out of every 7-day period, or for 10 consecutive days out of every 14-day period. The Technical Officers Deputy will determine the daily starting time, which may vary to suit seasonal changes or train timetables.

The Technical Officers Deputy shall decide when 10/14-day work shifts will be worked. When a machine works further than 600km away from the machine's base depot, the contractor may request working a 10/14-day shift if occupation conditions allow. Transnet Freight Rail will consider such working shifts and the additional Saturday and Sunday shift payments will then apply.

OCCUPATION means a closure of the line on which work is to be performed for a specified period.

OCCUPATION DAY (To-day) means any day that the machinery will be required by the Technical Officers Deputy to be available.

OCCUPATION TIME (To) means the period(s) between the announced commencement time of an occupation and the time when the machinery is secured at its staging point for the last time.

OVERTIME means any time worked in excess of the hours of a normal working day and any time worked on Saturdays, Sundays and statutory public holidays in excess of 5 consecutive days out of 7-day period or in excess of 10 consecutive days out of 14-day period, all on the written instruction of, or as approved by the Technical Officers Deputy.

PLAIN TRACK means all track excluding sets and restricted track.

SERVICE MANAGER means the person appointed by Transnet Freight Rail from time to time as the Service Manager to administer the Contract according to the powers and rights held by and obligations placed upon him in terms of the Contract. Any reference made in any document of this contract of Project Manager shall imply or refer to the Service Manager.

PARTICULAR SPECIFICATION means any document titled Particular Specification, Special Conditions and Specifications, or Special Conditions, forming part of the documents constituting the Contract and which stipulates the special contract provisions and specifications pertaining to the Contract.

QUOTED PREPARATION TIME (T_q) means the combined period, as quoted by the Contractor in the Schedule of Machinery (for one complete cycle), to move the machinery from its staging point, travel to the point of work, to prepare it for work, and on completion of the work to return and secure it at the staging point, clear of the occupied track.

RESTRICTED TRACK means that portion of plain track where locking bars, guard rails and check rails are not removed prior to working or where sleepers are skewed by more than 75mm (measured at the rail's centre line) or where Dowty retarders and boosters are fitted which prevent the machine from producing work at the scheduled rates as defined in the Special Conditions and Specifications.

SETS mean all types of turnouts, including crossings, single and double slips.
SHIFT ALLOWANCE (normal) means an allowance paid for time worked on a Saturday, Sunday or statutory paid public holiday when working 5 consecutive days out of 7-day period or 10 consecutive days out of 14-day period (Payment for shift allowance ceases when overtime is paid)

SPLICE JOINT means a prefabricated rail expansion device. The thermit welds at either end demarcate the extremities of the splice joint.

SPLIT OCCUPATION means an occupation on any one-day, divided into 2 periods, the sum of which does not exceed 9 hours, with a 2 hour break in between and the total period not exceeding 11 hours.

STANDING TIME (T_s) means a stoppage of work caused by Transnet Freight Rail.

TECHNICAL OFFICER means the person appointed by the SERVICE MANAGER from time to time as the Service Manager's representative on a depot to administer the Contractor's performance and execution of the Work according to the powers and rights held by and obligations placed upon the Technical Officer in terms of the Contract.

TECHNICAL OFFICERS DEPUTY or TECHNICAL OFFICER means the person appointed by Transnet Freight Rail under the control of the TECHNICAL OFFICER from time to time to take occupations for the machines for the contract, pilot machines to and from site and to supervise the execution of the workload and ensure safe and quality work being done by the contractor and the machine.

TIME WORKED IN (Twi) means any day a machine is agreed to be available and works outside of and in lieu of a normal working day. Such Twi as well as production statistics and all relevant times must be reflected against the day for which the time was worked in.

TOP means a change of gradient of one or both rails.

TRACK means and includes plain track, restricted track, sets, splice joints and all joint assemblies.

TRAVELLING TIME (Tt) means the time for the machinery to travel between work site and staging point.

TWIST means the algebraic difference between adjacent cant measurements.

VERSINE means the offset measurement at midpoint of a 10m chord taken at any location on curved track. Measurements will be taken 15mm below the top of the rail, against the gauge side of the rail used by the machine as a datum for aligning.

WORK means the work to be carried out in terms of the Contract.

WORKING TIME (Tw) means the periods during which the machinery is actually engaged on the operation or function for which it was provided.

3.10.2 Subcontracting procedures

No part of the contract may be sub-contracted without written approval from Transnet Freight Rail

3.11. AVAILABILITY

3.11.1 The machinery shall be available, warmed up and at the place of Work on the date and at the time indicated by the Technical Officers Deputy.

3.11.2 Machinery will be regarded as available when moving from one Work place to another

3.11.3 Moving to effect initial delivery, and final removal after completion of the Work, as well as moving requested by the Contractor (i.e. for maintenance or temporary storage of the machine at locations other than the Work place) will not be included when determining availability.

3.11.4 The Technical Officers shall give the Contractor a minimum of 14 days written notice to stop work temporarily for a period exceeding 14 consecutive days and a minimum of 14 days written notice to resume work after such temporary stoppage. Such idle time shall not be included in measurements for availability.

3.12 NON-AVAILABILITY

- 3.12.1 The Contractor shall advise the Technical Officers as soon as possible when any machinery is not available for work at its appointed place of Work and shall indicate the estimated time when it will be available for work.
- 3.12.2 Should any of the specified components or functions of the machine be non-available, the machine will be regarded as non-available.
- 3.12.3 Machinery will be regarded as available after breakdown when it is declared available and placed on the track for the purpose of testing, resetting or working, unless after the period of testing and resetting the machinery is still non-available. In the latter case, breakdown time will commence from the time that the machinery previously became non-available.
- 3.12.4 The provisions regarding productivity and standards of workmanship and accuracy shall apply during periods of testing or resetting.
- 3.12.5 When the machine is not available at all for Work on a day because of a breakdown on the previous day, occupation time and non-availability will both be equal to Tom hours.
- 3.12.6 Should a single stoppage of Work due to a breakdown of a machine exceed or be likely to exceed 60 minutes, the Technical Officers Deputy may require the machine to be removed to a staging point as soon as possible. Such traveling, whether from or returning to the point of breakdown, will not be included in Tt, but will be included in Tb.
- 3.12.7 If the Contractor is instructed to work either overtime or more than Twm, non-availability due to breakdown occurring in such time will not be penalised. Occupation time will also not be measured during such breakdown.

3.13 UNSATISFACTORY PERFORMANCE OF THE MACHINERY

- 3.13.1 The Service Manager or Technical Officers may terminate the Work and/or order the machinery to be moved to another place of Work and/or order the removal of mechanic(s) and/or operator(s), and/or order the temporary or permanent removal and replacement of a machine under the following conditions:
- When the output of the machinery is less than 70% of the required minimum productivity for a period of two consecutive months, or
 - when the percentage availability of the machinery (as described in the Special Conditions of Contract and Specifications) is less than 75% for a period of two consecutive months.
- 3.13.2 The Contractor may substitute, either temporarily or for the duration of the Contract, other machinery in place of that listed in the Schedule of Machinery offered. The substitute machinery shall be subject to all the terms and conditions of the Contract and shall in no way be inferior to the original machinery. The Service Manager and Technical Officers shall be advised of any proposed substitution, which shall be subject to his approval.

3.13.3 Should the Service Manager or Technical Officers at any time, be of the opinion that the machinery provided by the Contractor is performing defectively or is incapable of achieving the specified output and availability the Service Manager or Technical Officers may notify the Contractor in writing, but the Contractor shall not be relieved of any of his contractual obligations if such notification is not given.

3.13.4 The Contractor shall there-upon take steps to improve the output and availability of the machinery to specified performance levels or to replace the machinery with machinery capable of achieving the specified performance, failing which the Employer may act in terms of **Clause Z.5.9 of Contract Data**.

3.14 MACHINE MOVEMENTS

3.14.1 The Contractor shall deliver the machinery in full operational condition, with all operatives, to the initial place of Work, as directed by the Service Manager or Technical Officer.

3.14.2 The Contractor shall not place the machinery onto the track or remove it there from, or use it in any way, except when authorised to do so by the Technical Officer or his deputy.

3.14.3 The Contractor is responsible for movement of his machines in the occupation area.

3.14.4 Machinery shall not be operated as a train unless a representative of Transnet Freight Rail, appointed by the Technical Officer, who is authorised to give instructions regarding the movement of the machinery, travels on the machinery to its destination. The Contractor shall assist Transnet Freight Rail in all matters concerning the safety of trains, persons and the machinery.

3.14.5 The Contractor shall ensure that the off-tracking rails are correctly placed and fastened before lowering or moving the machinery onto them.

3.14.6 The Contractor shall point out to the Technical Officers deputy any part of the track or off-track stand where conditions may constitute a danger to the machinery and its ancillary equipment, and record this in the work book. The Contractor shall however repair off-track platforms where work can reasonable be expected to be done by the labour provided with the machine as per the schedule of labour.

3.14.7 The Contractor shall load and unload all machinery to be transported by rail truck and shall be responsible to properly secure all machinery to be so transported.

3.15 MEASUREMENT AND PAYMENT

3.15.1 The quantities in the Price List are estimated and may be more or less than stated. The Technical Officer will measure all the work done and certify payment therefore in accordance with the Price List. The absence of stated quantities is no guarantee that none will be required.

- 3.15.2 Payment for establishment of a machine at the commencement of the Contract will only be made after the machine has attained the required minimum availability over a period of one month.
- 3.15.3 Should the Contract not be completed for any reason whatsoever, due to the Contractor, he shall refund to Transnet Freight Rail a percentage of the establishment cost. The refund shall be proportional to the uncompleted period of the Contract.
- 3.15.4 In the case of unknown, alternative or substitute machines, establishment payments will only be made after successful completion of the trials and only for the initial machine establishment.
- 3.15.5 Measurement and payment for the hire and operation of the machinery will be made as specified in the Particular Specification. The following general payment provisions shall apply:
- 3.15.5.1 A machine-hire rate per day for each production machine that is available and operational. The rate shall include for all accessory labour, tools, equipment, etc., and every thing whatsoever pertaining to the operation and maintenance of the machine.
- 3.15.5.2 A production-rate for each unit of time worked or work produced by the machine during actual working time. The rate shall include for all labour, fuels, consumables, materials, etc. and every thing whatsoever, pertaining to the production output of the machine. The rate shall apply to all work performed on a "normal working day" as defined and to all Double-Shift working.
- 3.15.5.3 An extra-over payment will be made for overtime worked or production units produced during overtime working, i.e. time worked in excess of the maximum daily occupation time (Tom) on a normal working day and on Saturdays, Sundays and statutory public holidays. The overtime payment will not apply to Double Shift working.
- 3.15.5.4 Contractor shall submit, with their tenders, full particulars of the labour task crews, allowed for in the rates tendered in respect of **clause 3.15.5.1 and 3.15.5.2**, to undertake the tasks and functions specified in the Particular Specifications. Such particulars shall include the details of crew strengths i.e. numbers of labourers and supervisors or technicians, etc. Additional payment will be made when the machine is required to work outside the contract area described in the particular specifications.
- 3.15.5.5 No payment whatsoever will be made for periods of non-availability.
- 3.15.5.6 No payment will be made if a machine is unable to work as a result of an accident to the machine, regardless of the cause of such accident.
- 3.15.5.7 When two or more machines work in tandem and as an interdependent production system, the entire group of machines will be deemed to be non-available if the non-availability of one or more machines renders the entire production system substantially unproductive.

3.15.5.8 The Contractor shall be paid at the hourly rates in the Labour Payment Schedule when the Technical Officer approves a temporary increase in labour to perform the tasks and functions specified in the particular specification, at particular workplaces.

3.16. PAYMENT CERTIFICATES

3.16.1 On or about the last day of each month, the Technical Officer will make a progress measurement of the work done in conjunction with the Contractor.

3.16.2 Thereafter the Service Manager will issue a certificate authorising payment of such sum of money as he may consider represents the value of the work referred to in **clause 3.16.1**.

3.16.3 The Contractor shall be entitled to receive payment of the amount authorised in the said certificate within 45 days from the date of measurement or receipt of the Contractor's VAT-invoice, whichever is the later. Such payment will be regarded as an open payment, and both the certificate and payment will be subject to revision and adjustment by the Service Manager if at any time he is of the opinion that the certificate does not represent accurately the value of work completed or to correct previous over or under payments.

3.16.4 In the event of failure by Transnet Freight Rail to make payment within the time stipulated in **clause 3.16.3**, he shall pay to the Contractor interest at prime overdraft rate as certified by the Contractor's bankers upon all overdue payments of such certified amounts, from the date on which such payments should have been made. Interest payments shall not be applicable to corrections made in respect of previous over- or underpayments.

3.16.5 The Service Manager shall, within 28 days after completion of the Contract, authorise the release of Performance Bond, and submit for approval by the Employer a final payment certificate which, after approval by the latter, shall be issued to the Contractor, thereby certifying both the final completion of the Contract Work and the amount due to the Contractor. The Service Manager may deduct from the Final Payment Certificate any money then due by the Contractor to Transnet Freight Rail under the Contract, and for such provisions for the resolution of any disputes which may at the time exist between the Contractor and Transnet Freight Rail, as is deemed necessary by him.

3.16.6 The Service Manager shall, within 14 days after approval by the Employer and subject to **clause 3.16.5**, send the final payment certificate to the Contractor who, by countersigning thereof, shall certify his acceptance of the amount shown due to him as being full and final payment, subject only to the resolution of outstanding disputes.

3.16.7 Within 30 days after the receipt of the Contractor's certification, Transnet Freight Rail will remit to the Contractor the balance of all money so due under the Contract in terms of the final payment certificate.

- 3.16.8 Where the Contractor fails to certify the final payment certificate or has not disputed the correctness thereof within three months after its receipt by him, Transnet Freight Rail will deem the Contractor to be in agreement with the final payment certificate and will effect payment in terms thereof.
- 3.16.9 Transnet Freight Rail will not consider or admit any claim arising from the final payment certificate or in connection with the Contract, which has not been lodged with the Service Manager within a period of three months after receipt by the Contractor of the final payment certificate, and the Contractor accepts and acknowledges that by his failure to lodge a claim within the above-stipulated period of three months, he waives such claim and relieves Transnet Freight Rail of responsibility for such claim.
- 3.16.10 Neither the issue of the final payment certificate nor any payment made there under shall release the Contractor from any liability to indemnify Transnet Freight Rail against, and to reimburse it in respect of, any claim made or to be made against it by a third party for damage or loss sustained by such third party in consequence of any wrongful act or omission of the Contractor, or his employees or agents.

3.17 DAILY RECORDS AND INSTRUCTION BOOK

The Contractor shall submit such returns as may be required by the Technical Officer. He shall also provide and keep on each machine a duplicate carbon copy book, A4 size, the Workbook, in which instructions and events concerning the contract work shall be recorded, signed and dated by the Technical Officer or his deputy, and the Contractor.

3.18 FORMAT OF COMMUNICATION

- 3.18.1 The Contractor and the Technical Officer shall notify each other in writing of the names of their representatives who will be present during track occupations. These, as well as any changes in the personnel, shall be recorded in the workbook.
- 3.18.2 Before work is commenced, the Technical Officer's deputy will enter in the work book the approximate positions of underground or hidden electrical conductors that may affect, or be affected by, the Work to be done under the Contract, or alternatively, endorse in the work book that no such conductors exist.
- 3.18.3 The Technical Officer shall make the necessary arrangements to move the machinery by rail from one work site to another, and shall give the Contractor written notice of the date and time of departure. Major movements will be planned and the time allowed should be a minimum of 14 days or such shorter period as agreed.
- 3.18.4 The Technical Officer shall give the Contractor a minimum of 14 days written notice to stop work temporarily for a period exceeding 14 consecutive days and a minimum of 14 days written notice to resume work after such temporary stoppage. Such idle time shall not be included in measurements for availability.

- 3.18.5 The Contractor shall point out to the Technical Officer any part of the track or off-track stand where conditions may constitute a danger to the machinery and its ancillary equipment, and record this in the work book. The Contractor shall however repair off-track platforms where work can reasonable be expected to be done by the labour provided with the machine as per the schedule of labour.
- 3.18.6 Should the tacho-graph or the event recorder break down, the Technical Officer's deputy will keep a complete written record of the starting and ending times of all events occurring during a track occupation. The Contractor shall sign this record if he agrees, and if he disagrees, he shall indicate on the record the reasons for the disagreement and then sign the document. Such disagreement shall be settled by negotiation between the Technical Officer and the Contractor.
- 3.18.7 The Contractor shall provide and maintain walkie-talkie radio transceivers with a minimum range of 5km in open country. The Technical Officer, in consultation with the Contractor, will allocate suitable frequencies within the 450MHz to 470MHz band for configuration of the radio equipment. The Contractor will be given seven day's written notice when additional radios are required.

3.19 KEY PERSONNEL

- 3.19.1 Service Manager is the person appointed by the Employer (Transnet Freight Rail) from time to time to administer the Contract according to the powers and rights held by and obligations placed upon him in terms of the Contract.
- 3.19.2 Machinery shall not be operated as a train unless a representative of Transnet Freight Rail, appointed by the Technical Officer, who is authorised to give instructions regarding the movement of the machinery, travels on the machinery to its destination. The Contractor shall assist Transnet Freight Rail in all matters concerning the safety of trains, persons and the machinery.
- 3.19.3 At least one qualified and experienced mechanic shall be in attendance at all times during track occupations and when the machinery travels as a train.
- 3.19.4 The Contractor shall appoint one suitably qualified person as his representative at each occupation.
- 3.19.5 The Contractor and the Technical Officer shall notify each other in writing of the names of their representatives who will be present during track occupations. These, as well as any changes in the personnel, shall be recorded in the workbook.
- 3.19.6 At the start of each occupation the Contractor shall, in the presence of the Technical Officer's deputy, perform the daily tests laid down by the Technical Officer. The brakes shall be briefly applied at low speed when traveling on level track or upgrade. If in the opinion of the Technical Officer's deputy the brakes do not function satisfactorily, the machinery shall be removed immediately to a staging point. Machinery staged due to defective brakes will be regarded as non-available.

3.19.7 The warning system shall be activated by an appointed employee of the Contractor. The Contractor's appointed employee shall be in continuous radio communication with Transnet's protection flagmen who will warn the Contractor's employee of approaching trains on adjacent lines.

3.20 MANAGEMENT MEETINGS

3.20.1 On or about the last day of each month, the Technical Officer will make a progress measurement of the work done in conjunction with the Contractor.

3.21 FORMS OF CONTRACT ADMINISTRATION

3.21.1 The Service Manager shall, within 28 days after completion of the Contract, authorise the release of Performance Bond, and submit for approval by the Employer a final payment certificate which, after approval by the latter, shall be issued to the Contractor, thereby certifying both the final completion of the Contract Work and the amount due to the Contractor. The Service Manager may deduct from the Final Payment Certificate any money then due by the Contractor to Transnet Freight Rail under the Contract, and for such provisions for the resolution of any disputes which may at the time exist between the Contractor and Transnet Freight Rail, as is deemed necessary by him.

3.22 PROFESSIONAL INDEMNITY INSURANCES

3.22.1 The Contractor shall take every precaution not to cause damage to property or injury to any person as a result of his execution of the work.

3.22.2 Transnet will insure in the joint names of Transnet Freight Rail and the Contractor against all legal liabilities which may arise from the accidental death of or injury to third party persons and/or accidental loss of, or damage to third party property in the course of the Contractor's execution of the Work.

3.22.3 The insurance policy will be for an indemnity limit as stated in the policy and will be maintained in force during the entire period of the Contract.

3.22.4 The Contractor shall in the case of a liability arising out of a negligent act or omission on the part of the Contractor is responsible for payment of the amount(s) stated in the policy as being the deductible.

3.22.5 The insurance to be provided in terms clause 6.2.2 of Contract Data will have a cross liabilities cover in respect of which each party shall be separately indemnified in respect of claims made by any one of them against the other as though a separate policy has been issued to each of them.

3.22.6 The Contractor shall insure against loss of or damage to his own machinery, tools, equipment, materials and site establishments and any consequential financial losses arising from such damage. This insurance is to be maintained in force during the entire period of the Contract. The Contractor shall likewise arrange his own insurances in respect of motor vehicle liabilities and employer's common law liabilities of the Contractor.

3.23 HEALTH AND SAFETY REQUIREMENT AND PROCEDURE

3.23.1 The Contractor shall comply with all applicable legislation and the Transnet safety requirements. The cost of such compliance shall be borne by the Contractor and shall be deemed to have been allowed for in the rates and prices in the Contract.

3.23.2 The Contractor shall, in particular, comply with the following Acts: -

3.23.2.1 The Compensation for Occupational Injuries and Diseases Act, (Act 130 of 1993); The Contractor shall produce proof of his registration and good standing with the Compensation Commissioner in terms of the Act.

3.23.2.2 The Occupational Health and Safety Act (Act 85 of 1993); The Contractor is in terms of section 37(2) of Act 85 of 1993, deemed to be an employer in his own right with duties as prescribed in the Act and agrees to ensure that all work will be performed or machinery and plant used in accordance with the provisions of the Act in respect of all persons in his employ, other persons on the premises or the site or place of the Work or on the Work to be executed by him and under his control in terms of the Contract. The agreements in this Contract and all documents attached or referred to, form an integral part of the arrangements and procedures stipulated in the aforementioned section.

3.23.3 The Contractor shall comply with the current Transnet Specification E.4E, Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act, Act 85 of 1993 and Regulations as applicable, and shall, before commencement with the execution of the Contract, submit to the Technical Officer,

- documentary proof of his procedural compliance with the Act and
- particulars of his Health and Safety Policy and Programme to be implemented on the Work in accordance with Specification E.4E.

The Contractor's Health and Safety Policy and Programme will be subject to the agreement of the Technical Officer, who may order supplementary and/or additional safety arrangements and/or different safe working methods to ensure compliance by the Contractor with his obligations as an employer in terms of the Act.

3.23.4 The Contractor shall comply with the current Specification for Work On, Over, Under or Adjacent to Railway Lines and near High Voltage Equipment - E7/1, where applicable, and shall take particular care of the safety of his employees working on or in close proximity to a railway line during track occupations as well as under normal operational conditions.

3.23.5 He shall also comply with all other safety requirements, regulations and guidelines of Transnet applicable to the nature of Work carried out under the Contract and shall obtain the particulars thereof from the Technical Officer.

3.23.6 In addition to compliance with clause 3.23.2 hereof, the Contractor shall report all incidents contemplated by Section 24 of the Act in writing to the Technical Officer. Any incident resulting in the death of or injury to any person on the WORK shall be reported within 24 hours of its occurrence and any other incident shall be reported within 48 hours of its occurrence.

3.23.7 The term "safety rules" is used in a generic sense and refers to all Transnet arrangements, procedures and requirements, pertaining to safety, specified or incorporated by reference in the contract documents, such as the Specification for Work On, Over, Under or Adjacent to Railway Lines and near High Voltage Equipment, E7/1, the Electrical Safety Instructions - High Voltage Equipment. (Copies of these documents are available for inspection at the offices of Transnet Freight Rail.)

3.24 PARTICULAR SPECIFICATIONS

Works specification

3.24.1 Generic specifications:

- E4B(November 1996): Minimum communal health requirements in areas outside the jurisdiction of Local Authority.
- E4E(August 2006) – Safety Arrangements and Procedural Compliance with the Occupational Health and Safety Act.
- Addendum No.1 to the E7/1 (July 1998) specification.
- Specification E7/1(July 1998) for works on, over, under or adjacent to railway lines and near high voltage overhead lines.

3.24.1 Project specifications

- Particular specifications for Machines and service required

PART C 3.24

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PART C 3.24
PARTICULAR SPECIFICATIONS
MAINTENANCE OF PERMANENT WAY WITH ONE ON-TRACK DUAL PURPOSE
TAMPING MACHINE

1 SCOPE OF THE WORKS

1.1 Nature of work

This Contract includes the maintenance of track by the Contractor with a heavy duty, on-track turnout ballast tamping machine. The turnout Tamper is to be used to tamp newly built or re-built turnouts, built by turnout replacement contract. The Service Manager plans to tamp approximately 150 turnouts of every description annually. The machine will also be required to tamp plain track, mainly in the area where turnout replacement takes place.

The purpose of this contract is for the provision of the tamper function as a sub-Contractor to the turnout replacement Contractor. This contract therefore will only provide the heavy duty on-track tamping capacity for the lifting, aligning and tamping of the turnouts faster and at a higher quality than without the use of a tamper. All support labour for the turnout replacement and support of the tamping function is to be provided by the main Contractor under the turnout replacement contract and is not to be part of this contract.

The Contractor shall qualify all sub Contractors that he utilises in carrying out activities to deliver outputs.

Any clause in this Particular Specification, contradictory to requirements elsewhere in this contract shall take preference.

1.2 Contract area

The Contract area will be the track owned or maintained by Transnet Freight Rail. The machine will work mainly on the General Freight lines. The machine will be required to work in the group with the turnout replacement machine and support train and ballast train. The Service Manager may require the machine to work outside the contract area mentioned above.

1.3 Duration of Contract

1.3.1 The Contract shall commence as soon as possible after the award of the contract. The starting date will be informed in the letter of acceptance of tender.

- 1.3.2 The Tenderer must specify in his tender how soon after the award of contract the machine can commence work.
- 1.3.3 The contract period shall be twenty four (24) months. This shall include an option for the extension of the contract for a further period of up twelve months. The extension of the contract period will be notified more than two months before the expiry date of this contract.
- 1.3.4 The machine will mainly be used for the tamping of newly built turnouts, placed by the turnout replacement contract. The turnout replacement contract calls for approximately 130 – 150 turnouts to be replaced per year or 10 to 18 turnouts per month. The estimated tamping time required per turnout could probably be in the order of 1 to 2 hours, therefore requiring say +- 15 to 30 hours working time per month (Tw). The time required to tamp each turnout will depend on the process selected for the replacement and finalising of the turnout by the Supervisor and Contractor. The process will depend on the requirements for the specific turnout as well as the occupation windows available. Workload and occupation time available will also determine whether other tamping work in the vicinity of the turnout can be arranged.

2 DEFINITIONS

The following definitions shall apply in addition to those in the Scope of Works.

SINGLE TAMP: A tamper passes over the track and tamps every sleeper once.

DOUBLE TAMP: A tamper passes over the track and tamps every sleeper twice in succession. For every tamp the tines are lifted clear of the ballast.

SINGLE PASS: A tamper passes over the track once and tamps every sleeper (single or double tamp).

DOUBLE PASS: A tamper passes over the track, tamps every sleeper (single or double tamp), returns with tines in the raised position and again passes over the track, tamping every sleeper (single or double tamp).

RESTRICTED TRACK: That portion of plain track where locking bars, guard rails and check rails are not removed prior to working or where sleepers are skewed by more than 75mm (measured at the rail's centre line) or where Dowty retarders and boosters are fitted.

TAMPING POSITION: Both sides of every sleeper-to-rail fastening.

3 TYPE OF MACHINE AND FUNCTIONS REQUIRED

3.1 Tamping functions:

3.1.1 The machine shall be able to tamp plain track, restricted track, all types of sets listed in the schedule of machines, splice joints and all joint assemblies.

- a). For the new turnouts, the machine will have to lift, align and tamp the new turnout. The labour for boxing in of ballast, will be supplied by the turnout replacement Contractor. Other support labour and technicians, such as signaling and electrical technicians, track masters and welders, will be supplied either by Transnet Freight Rail or the turnout

replacement Contractor.

- b). Where existing track is to be tamped and where new work is to be finalized in separate occupations afterwards, the Signaling and electrical equipment such as axle counters and connecting rods will either not be removed, or be removed by others.
- c). Where the machine may be required to tamp track with "DOWTY" plungers, this equipment will be removed by Transnet Freight Rail.
- d). Bonds and cables will normally not be removed for tamping purposes. Where bolted connections exist and have to be removed for tamping, this shall be done as part of the turnout replacement contract.

3.1.2 The Contractor shall be required to optimise the tamping process (application of hydraulic pressure range, tine vibration frequency, squeeze time, tine amplitude, tine size and tamping depth below the sleeper in clean and fouled ballast), so as to ensure long-term durability of track geometry.

3.1.3 The Contractor shall also be required to provide tamping for different processes of the placing and boxing in of ballast. The machine will have to be applied according to the process selected by the turnout replacement Contractor. The process used and use of the tamper to do the lifting, aligning and tamping of the turnout, shall be such so as to optimise occupation time in the total process of building the turnout. Methods may vary depending on ballast supply arrangements and constraints as well as occupation time available.

The following options could apply:

- a) Place part of ballast bed by front end loader and compact ballast before building of new turnout. Final lifting tamping and alignment with tamper.
- b) Build new turnout on formation, off-load part of ballast with front end loaders, lift turnout with jacks and shovel pack. Tamper then to tamp and again lift and tamp up to final level. Scheduling of tamper and ballast train in between could lengthen total time of occupation.
- c) Build new turnout on formation and offload all ballast with more than one pass of the ballast train. Tamper then to be used in between to lift tamp and align turnout within allowable limits so as to not damage or over stress fastenings.

3.1.4 The machine shall tamp at least 95 percent of the tamping positions of every set, and all other tamping positions. The remaining tamping positions of sets shall be tamped by the labour from the turnout replacement contract, by means of Poinjars or similar equipment. (A set is defined in clause 8.5).

The turnout portion of a set, up to the "end of turnout", shall be tamped during the same pass as the straight. The Contractor shall indicate, on the set diagrams in Appendix B hereto, which tamping positions his machine cannot tamp, and the extent to which the curved (turnout) portion can be tamped with the machine on the straight (through) line.

- 3.1.5 The machine shall be capable of lifting the track up to 100mm (50mm in sets) per pass and of slewing the track up to 50mm (25mm in sets) per pass. Joints of diamond and scissors crossings, single and double slips, and crossovers between adjacent tracks may have to be loosened and after tamping, be re-instated. This may be required where the correction of the alignment will be needed to be done by the tamping machine. Any such work will be as required and instructed by the Supervisor. If cutting or welding of the rail is required for such work, it will be done by either the labour from the DESEC contract or by Transnet Freight Rail.
- 3.1.6 The machine shall be capable of tamping between 230mm and 440mm below rail level with the top of the tines adjusted to be 10mm below the underside of the sleeper.
- 3.1.7 The squeezing time shall be within a range of 0.8 to 1.0 seconds.
- 3.1.8 When tamping turnouts, tamping of the portion between the SRJ and ES/ETO in sets and 25m on either end of the set, the tamping assembly shall consist of at least 8 tines. If available, the tamping assembly for one sleeper of normal track shall consist of at least 16 tines. Individual control of the tamping assembly for each rail must be possible.

Tenderers may offer machines of a different tine configuration and must qualify their tenders stating what the tine assembly of the machines they offer will be and what will be required to change tine assembly, if required. (Time required to change and if any additional costs will be involved.)

- 3.1.9 The method of tamping shall provide for an equal positive horizontal force between opposing tines. The tine closing force shall be applied hydraulically and the system shall be fitted with an adjustable pressure control. Pressure gauges shall be fitted in such a way that it can be easily monitored by the Supervisor's deputy.
- 3.1.10 The machine shall lift the track, tamp the ballast under the sleeper(s) and align the track to an automatically determined line and level, in one continuous action. The tamping cycle shall be automatic. Once initiated by the operator, the closing and extraction of the tines and synchronisation thereof with the track lifting and levelling operations shall follow automatically. By-pass switches to engage manual operation will not be permitted.
- 3.1.11 Each tamping tine's tip size (frontal surface area) shall not be less than 7000mm² when using 16 tines/sleeper or 9000mm² when using 8 tines/sleeper. Measurement shall be performed by the Supervisor's deputy by tracing the tine on graph paper and determining the area.
- 3.1.12 The machine shall have automatic lifting and lining systems for use on all track and in addition shall have "design" lifting and lining instruments for use on tangent track. The Contractor shall move, position and align the instruments to beacons provided by Transnet Freight Rail.

The non-availability of either the design lining or lifting system will render the machine non-available. The design lifting and lining instruments shall be repositioned during Ts (Standing time caused by Transnet Freight Rail).

Tenderers shall quantify under what conditions alignment equipment cannot function

accurately (i.e. Laser in misty conditions).

3.2 Mechanical and motive aspects

3.2.1 Off-tracking equipment:

As the machine will work with the DESEC team, off tracking will most probably never be used. There may however be circumstances whereby off-tracking may be an advantage in optimising the occupation. Tenderers therefore shall qualify their tenders stating whether their machine offered can off-track. If off-tracking is possible and if it may assist in the process, any assistance in preparation of the off-track stand and the placing of the machines off-tracking rails, will be provided by the labour from the turnout replacement contract.

3.2.2 The machine shall be capable of maintaining the travelling speeds as required in the schedule of machines.

3.2.3 The machine will be mostly required to either be hauled by a train or be loaded for a move by train for long distance moves. Tenderers shall qualify their tenders stating limitations or requirements for such a move.

3.2.4 The machine shall be equipped with a third rail auxiliary lifting device for tamping turnouts.

3.3 Preparation work for tamping operation and protection duties.

3.3.1 The tamper is to work with the turnout replacement contract. All preparation work required from hand labour to be done to ensure a proper lasting tamp result, shall be provided by the labour of the turnout replacement contract. The Contractor shall however indicate during planning what labour input will be required to assist the tamper.

3.3.2 The support labour provided with the turnout replacement contract, shall measure and evaluate turnouts to be tamped to help the tamper to restore the track to the initial design standard or to a new design decided upon by the Supervisor. Curve beacons, indicating beginning and end of circular and transition curves, shall be the responsibility of the turnout replacement contract.

3.3.4 Where other turnouts are to be tamped in the vicinity of the turnout replacement area, the Turnout replacement Contractor or any other supplier selected by the Supervisor, will be responsible for the preparation work with regard to stability and geometry on the turnouts to be tamped. The Supervisor must be informed, where turnouts may not be able to be lifted aligned and tamped to the laid down standard. This shall include problems such as fouled ballast or rotten or bent sleepers. Any clamp-locks on the sets have to be removed, restored and adjusted by Transnet Freight Rail.

3.3.5 Preparation work with regard to the stability of the track to be tamped is to be done by the turnout replacement Contractor. Repair work that will be required, will be so as to ensure the effective utilisation of the turnout tamper.

- 3.3.6 Support labour to be supplied under this contract. (Provisional item.)
Where work will be required away from the turnout replacement area and sufficient labour cannot be provided by the main Contractor of the turnout replacement contract, for assistance of the tamper, the Supervisor may require the Contractor to provide labour, to be paid for under day labour rates. If required, this additional labour shall be provided with the necessary hand tools such as measuring equipment, beaters, forks, spanners, bars and levers for sleeper clip and spring fastenings. This additional labour, supervision and transport will be paid for separately under item 8 of the schedule of prices. (Day labour). When required at least one months notice will be given to the Contractor.
- 3.3.7 Flagmen
Flagmen shall not normally be required for the work proposed for this machine. Where the machine is to work with the turnout replacement contract, flagman will be provided as part of the contract. If the machine is to work separately from turnout replacement contract, flagmen will be provided as one of the following options:
- a) Flagmen provided by Transnet Freight Rail.
 - b) Flagmen provided by the turnout replacement contract for this separate area.
 - c) Under exceptional circumstances, two Flagmen may be required to be provided under day rates under item 8 of this contract. If this is required, at least one months notice will given for the provision of the flagmen. Provision of the flagmen shall include the provision and cost of three two way radios as well for all housing and transport to and from site of the flagmen.
- 3.4 Traction and signal bonds.
- 3.4.1 The Contractor shall repair all bonds / cables damaged or broken off during tamping operations during the period of the occupation.
- 3.4.2 Transnet shall supply all the material required for repairing of broken bonds and cables on a one to one exchange basis (used material for new material.)
- 3.4.3 The Contractor shall provide labour and equipment (inclusive of Expanded Collar fastening consumables and lugs) required to remove, repair new bonds where required and replace signals and electrical bonds.
- 3.4.4 If holes are required for bonds a rail drill shall either be supplied by Transnet Freight Rail or the holes shall be drilled by Transnet Freight Rail.
- 3.4.5 Where cables are required to be cut, the cable shall be cut to the correct lengths and the crimping of lugs onto cables be done by the Contractor. No splices will be allowed in bonding cables.
- 3.4.6 This shall include track feeder bonds (painted red), which may only be worked upon under supervision of a Competent Electrical Officer. Transnet Freight Rail shall only provide the cable for bonding. All bonding shall be completed during the period of the occupation.

- 3.4.7 Bonding shall be performed by a bonder qualified to Transnet Freight Rail's standard manual for "Earthing and Bonding for 3kV DC, 25kV and 50kV AC bonding" B_023 Issue 3 and B_028 Issue and subsequent instructions which includes the steel wire standard in lieu of existing copper bonds, and the expanded collar fastening system. The cables shall be correctly buried in the ballast as per instruction.
- 3.4.8 Signalling bonds may not be removed without the consent of the Service Manager's Deputy or the authorised Transnet Freight Rail Signalling representative. Where signalling bonds are damaged or removed, the Contractor shall provide the support labour to re instate the bonds. Transnet Freight Rail will however be responsible to ensure the correct method of re-connection so as to ensure the correct functioning of the signalling system.
- 3.4.9 Where prices for the bonding work is not included in the contract as specified above, the Contractor shall qualify the extension price submitted and specify the cost separately, based on a To day rate for bonding.
- 3.4.10 Huck Bolting will not be done in future. If however required, Transnet Freight Rail will provide the Huck Bolt machine.
- 3.4.11 Where, according to the judgement of the Supervisor, cables are broken or damaged due to negligence on the part of the tamper, the cost of such repair may be withdrawn from the tamping contract.
- 3.5 Quality measurements.
- 3.5.1 Geometry measurements may have to be done behind the tamper in accordance with Appendix C. These measurements will then be done by labour from the turnout replacement Contractor.
- 3.5.2 To ensure safety, measurements shall be done manually and/or electronically before the passage of the first train and before removal of the tamper from site.
- 3.5.3 The standards for structural gauge shall be adhered to (See E7/1 specification). The Contractor shall verify and ensure that his machine or any extended part of the turnout tamping unit does comply with the structural gauge parameters and adheres to the specified standards. If assistance for this is needed while tamping, the Contractor shall ensure that support is requested and obtained from the main Contractor of the turnout replacement Contractor.
- 3.5.4 Where required near bridges or on any other site where contact wire height may be a problem, the height of the contact wire shall be measured. For overhead bridges as well as level crossings this should be measured on both sides after the final tamp. The Contractor of the turnout replacement contract shall be responsible for measurements and height control. Heights below or above the allowable limit quoted in E7/1 specification will be unacceptable.

3.5.5 Stagger measurements shall also be the responsibility of the turnout replacement Contractor. The stagger of the contact wire (offset from the perpendicular on the track centre line) shall also be measured at all support structures, pull-off and knuckle points, as well as at mid-span on all curves, after the final tamp. Where more than one contact wire exist, the stagger of the innermost wire shall be measured. When sets of points are tamped, the stagger on both the through and the turnout contact wire shall be checked.

3.5.6 Where required the contact wire height and stagger measurements shall be reported to the Supervisor's deputy in writing (or computer printout) at the end of each shift, by the turnout replacement Contractor.

Measurements exceeding the allowable limits quoted in E7/1 specification shall be immediately reported to Transnet Freight Rail for rectification or adjustment by Transnet Freight Rail electrical staff. Each measurement shall indicate the mast location number as well as the relevant track section number.

3.5.7 The Contractor will not be allowed to use a contact system for the measurement of the electrical overhead wire height and stagger.

3.6 Training of contractors staff and compliance with safety requirements

3.6.1 General.

- a) The Contractor shall ensure that all staff working on or with the contract are adequately qualified and trained, so as to comply with any relevant safety and quality requirements. This applies for both the contractors own staff or any staff of a sub contractor employed by the contractor.
- b) This responsibility of the Contractor's to ensure that his staff is qualified and trained implies that:
 - i) Specific graded staff shall be qualified and sufficiently experienced and in possession of a qualified certificate for the required position or responsibility.
 - ii) All staff shall also possess any other relevant induction or safety qualifications.
 - iii) The contractor shall ensure that a complete up to date record is kept of safety qualifications or training and certification of all staff for all the relevant qualifications and safety requirements.
 - iv) The record of the qualifications and or training kept by the contractor shall also be available on site.
 - v) All relevant requirements for refreshment training shall be adhered to and the contractor shall ensure that the refreshments training and certification required is provided for the relevant staff.
- c) At the commencement of the contract, Transnet Freight Rail shall assist the contractor with the initial on-the-job training for the staff as specified below, so as to assist the Contractor to qualify the worker's / staff. The assistance for training shall apply only for the types of training listed in the Training Table 1, inserted below.

- d) The contractor shall ensure that all qualifications, training, and certification for all other requirements such as Machine Operators, Technicians / Fitters, Track Masters or Machine Track maintenance supervisors, Drivers, Crane and Earthmoving operators, Rail disc cutter operators, etcetera, are in place and are valid and that record is kept of such qualifications. This implies that the contractor shall ensure that proof of qualifications are kept when required.
- e) Where training is required by the Contractor for other than normal track work functions and Transnet Freight Rail has undertaken to provide this training, the following shall apply:
- The number of staff requiring training for a specific qualification or activity is to be provided by the contractor in good time to allow for arranging such training.
 - Training will normally only be provided only at a depot's headquarters
 - Arrangements for the training and/or testing must be made with the appropriate depot Technical officer or Transnet Freight Rail depot Production manager (Perway or Electrical)
- f) For critical work outputs as well as specific activities, the contractor shall ensure that he has a core group of workers with sufficient previous experience to take the lead in undertaking maintenance tasks to ensure experience of safe and productive working.
- g) Where any training is provided by Transnet at a depot or centrally at Esselen Park, the contractor shall be responsible for transport, accommodation and meals. Where the training is provided by Transnet, the lecture hall with facilities and handout material will be provided by Transnet.
- h) Where the contractor will be required to provide an accredited trainer, paid for by Transnet under the "Day Labour" rate, or where the contractor arranges his own staffs re training or refreshing training, Transnet will make available, free of charge, any of the existing depot venues if so required by the contractor. Arrangements for the venue for training shall be made by the contractor with the depot through the Technical Officer.
- i) When training is conducted by a representative of the contractor, the basic specifications and content of what is required to conduct the training, will be supplied by Transnet. Where Transnet cannot supply duplicate copies of this content, the copies may be duplicated by the contractor with the approval of the Technical Officer. The cost of the copies will then be re-funded to the contractor after the approval of the invoice. Payment will be made under the Lump Sum item in the contract.

3.6.2 Training to be provided by Transnet Freight Rail or by hired accredited trainers:

- a) The intention is that Transnet shall provide, where required, the training for the qualifications or certification as listed below at the start of this contract. Where Transnet cannot provide the training, the required accredited trainer shall be hired by the contractor and be paid for under the provisional day labour item.

- b) During the course of the contract any required alternative or follow up or refreshment training for new recruits or replacement staff, shall be undertaken by the contractor as part of the contract responsibility and at the cost of the contractor.
- c) For the purpose of pricing, where an accredited trainer is required to be provided by the contractor, the following assumption must be used:
- o The content of Training course material required by Transnet will be provided by Transnet.
 - o The trainer will need to be sufficiently qualified and then be tested by Transnet and be accredited by Transnet to conduct the training and testing and certification of candidates trained. Such a testing of a trainer shall be done by Transnet free of charge as part of a group of contracts but transport and accommodation cost of such a trainer shall be for the account of the contractor.
 - o Depot facilities such as venues for training may, on appointment with the depot, be used free of charge by such a trainer to conduct training for the contract.
 - o For any training, the Transport, accommodation and meals of any candidates being trained, shall be for the account of the contractor. This shall also apply at the start of the contract.

Training: Table 1: Training on TFR contracts: List of types of training

Type of Training	Staff required to undergo training	Estimated duration of training	Location of training	Trainer to conduct training at start of contract	Alternative trainer to conduct training at contract start	Future Refreshment training
Induction	All contract staff including new entrants. Start of work at any new depot	+/- 2 hours	Depot where work starts	TFR Technical officer or Track inspector	New recruits: Contractors accredited representative	Contractors accredited representative
Electrical awareness	All contract staff including new entrants	+/- 2 hours	Depot where work starts	TFR Depot's electrical officer or accredited trainer	New recruits: Contractors accredited representative	Contractors accredited representative
PWC (Electrical)	Supervisors, Operators, fitters, Technicians & Workers supporting fitters, working in risky OHTE areas.	2 days	Depot where work starts	TFR, Esselen Park or Depot accredited trainer, or TFR hired accredited trainer : By appointment at depot*	Replacement/new staff: Contractors accredited representative	Contractors accredited representative
Competency (Electrical)	Supervisors (Follow up training in PWC)	1 day	Depot where work starts	TFR, Esselen Park or Depot accredited trainer, or TFR hired accredited trainer : By appointment at depot*	Replacement/new staff: Contractors accredited representative	Contractors accredited representative
Flagmen Training	Flagmen and standby flagmen	5 days		TFR, Depot neighboring depot accredited trainer, or TFR hired accredited trainer : By appointment at depot	Replacement/new staff: Contractors accredited representative	Contractors accredited representative

Bonder Training	Bonder	5 days		TFR, Esselen Park or Depot accredited trainer, or TFR hired accredited trainer : by appointment at depot*	Replacement/new staff: Contractors accredited representative	Contractors accredited representative
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3.6.3 Track maintenance (Workers):

If required at the commencement of the contract, assistance with the training, to qualify the Contractors workers to perform the following tasks shall be given. This assistance shall be limited to showing the contractors Track master how work is to be done. Tools and repeat training must be provided by the contractor

- a) Track work as mentioned in the appropriate clause (Level crossing's and blocks, cattle guards, sleeper & Clip replacement / fastening, lubricators, ballast boxing etc.).
- b) Quality measurements as required per the quality control clause.

3.6.4 Training of Track Inspectors, Track Masters and or Trade hands (Perway):

- a) This training shall be solely the responsibility of the contractor. Only qualified people, qualified for the type of work required for the support required for the contract, shall be used by the Contractor for these positions. The Contractor shall ensure that staff used, do comply with requirements for the industry for the type of work required for the contract.
- b) The Contractor's Track Master/Track Inspector shall take full charge of the Contractor's resources on the work site. Such a contractor's Track Master or Track Inspector shall be responsible to ensure performing Track work safely and to the standard of the industry for the relevant type of work and line traffic conditions. An employee / agent appointed by the contractor, will not act as, or be allowed to take on any responsibility as, the **person-in-charge-of-the-occupation**. The function of **person-in-charge-of-the-occupation** is restricted any currant standard Transnet policy in place at the time of the work being performed. At present this is restricted to competent Transnet Freight Rail Track Masters and track Inspectors used for On Track contract work only.
- c) The **person-in-charge-of-the-occupation for an On Track machine** shall be a competent **Transnet Freight Rail employee**, reporting to the Transnet Freight Rail Depot Engineer. This person shall be responsible for the following on a work site:
 - Taking occupations
 - Placing and controlling the flagmen
 - Declaring the track safe for the passage of trains
 - Cancelling the occupation and recalling the flagmen
 - Communication with train traffic control with regard to occupation matters.
 - The issue and control of all flags, warning boards and detonators

3.6.5 Training of Flagmen:

- a) Flagmen used, may be either Transnet Freight Rail employees or employees of the Contractor.

- b) For this contract, flagmen are required to be provided by the contractor.
- c) Any flagmen provided will be subject to control testing by the Track Inspector of the section to ensure compliance of protection duties relevant for the section of track to be worked as well as the activity required to be performed, eg protection of Tamper work. The testing of flagmen proficiency by Transnet Freight Rail Track Inspectors is only a safety and quality control and does not exonerate the contractor of the responsibility to ensure the proficiency of the any flagmen used.
- d) The appropriate training for the flagmen can be provided once off for the contract by Transnet Freight Rail up to March 2010. Any training of Flagmen after this date as well as any refreshment training required after this date shall be provided by the contractor.
- e) Where Transnet Freight Rail requires flagmen to be trained, the pre-requisites for such persons to qualify to be trained, shall be basic literacy skills and Basic English language ability as well as any physical requirements required for this work such as good sight and hearing ability.
- f) Flagmen must be officially trained, evaluated and certified competent, (Transnet Freight Rail 407 – Item Number 37/270451 - "Certificate of Competency") by a designated competent person, before being used on protection duties. This certificate of competency shall remain valid for one (1) year only after, which re-testing and re-certification of competency will be required.
- g) In cases where a person was not performing flagmen duties for a period of 6 months or longer, he must be re-tested and again be re-certified competent, before he may be re-used for Protection Duties.
- h) The Transnet Freight Rail Depot Engineer remains ultimately responsible in terms of the requirements of Act 85 for the safe working environment of his own personnel as well as contractor's personnel within the track maintenance environment on his depot.

The Depot Engineer is therefore also responsible for ensuring that any changes in the Protection Procedures that may occur over time are effectively communicated to any flagmen prior to them being used for Protection Duties. Where such a change occurs and is communicated to a contractor, the contractor shall ensure that flagmen used by him are informed and trained to carry out the changed requirements.

3.6.6 Training of bonders.

- a) Bonders removing, replacing or repairing damaged bonds, shall be trained to ensure that only work, which they are trained and allowed to do, is done by them.
- b) The initial initialization training of bonders for this contract can be arranged for with the Transnet Freight Rail accredited electrical trainer, through the technical officer as specified above in this clause.

- c) Bonders shall be required to be trained for Electrical Permanent Way Competency and be trained to do WHAM bonding and bonding according to electrical specifications, instructions and drawings manual CEE 0059.84 and CEE0060.84, where applicable.
- d) Follow up training of bonders shall be responsibility of the contractor.

3.6.7 Electrical awareness, Educational and competency training:

- a) The following training shall be arranged for the following Contractors staff:

Course	Objective	Duration & trainer	Grade to attend
A) Awareness (Electrical)	To inform all contractors staff working near a machine and on the line on electrified sections of the dangerous situations of high voltage OHTE	Two-hour on-the-job lecture and training. Accredited Electrical trainer / Depot's Electrical technical officer.	<ul style="list-style-type: none"> All workers and staff working on the contract
B) PWC Educational (Electrical)	For the safe working on and with On-track machinery in the vicinity or near exposed High voltage OHTE.	Lecture room training = 1,25 d On-the-job training = 0,25 d Criterion test = 0,5 d Total = 2 days Accredited Electrical trainer	<ul style="list-style-type: none"> Workers working on a machine (High risk area's) Operators Machine fitters Area supervisors Contract supervisors
C) COM Competency (Electrical) (to follow A) (PWC)	Work permits safe working procedures under the direct supervision of a responsible representative.	Lecture room training = 0,25 d On-the-job training = 0,25 d Criterion test = 0,50 d Total = 1 day Accredited Electrical trainer	Supervisor (Responsible person in charge at machine working)

- b) The electrical awareness training must be arranged for beforehand on-the-job.
- c) The electrical educational and competency training may be arranged for at either a depot's lecture room's (Transnet Freight Rail property), or at a venue of the Contractors choice (Contractors cost).
- d) The Accredited Electrical trainer from Transnet Freight Rail required at the start of the contract, will be provided by Transnet Freight Rail at Transnet Freight Rail cost, provided that an arrangement for the training session required, is done beforehand and will fit in with the trainers training program for the year. This shall not include transport, accommodation and meals for candidates to be trained

4. STANDARDS OF WORKMANSHIP AND ACCURACY

- 4.1 The A-standard given in Appendix C hereof shall apply at all measuring stations except if, prior to tamping:

- 4.1.1 Any one of the TOP, CANT or LINE measurements at the measuring station exceed the C standard, or if the measuring station is one of more than three consecutive VERSINE measurements which exceed the B-standard to one side in a curve, or

- 4.1.2 The running top is such that the depth of the worst slack is more than the required lift, or
- 4.1.3 The lift for a single pass or the final lift of a multiple pass is less than 10mm or exceeds 25mm, or
- 4.1.4 The amount of slew, due to LINE or VERSINE errors is more than the maximum slew the machine can achieve per pass, or
- 4.1.5 The rail temperature is above the maximum temperature in the working (B) range as determined from Appendix E to the Scope of Works, or
- 4.1.6 Due to bent sleepers in a set, the required standards for vertical alignment cannot be achieved on both the straight and turnout lines. (In such cases the required cant on the straight (through) portion of the set will be specified, or
- 4.1.7 The horizontal alignment of the curved (turnout) line of a set cannot be corrected by the machine (see clause 4.8), In such cases the straight (through) line of the set shall be aligned correctly, or
- 4.1.8 The composition of the set is such that the required geometric standards cannot be achieved.
- 4.2 The standards of workmanship and accuracy apply to the tamping and aligning of established track and the final tamp of multiple passes on all track. The Supervisor will inform the Contractor when a different standard shall apply.
- 4.3 On transition curves the cant is to be increased proportionately along the length of the transition curve, or as otherwise directed, to the required cant of the butting circular curve.
- 4.4 The cant to be applied to curves will be as determined from the radius of the curve or as directed by the Supervisor.
- 4.5 On tangent track, reference points will be installed by Transnet Freight Rail where repeatable alignment is important. These will be a maximum of 200m apart.
- 4.6 The running top of the track and the alignment may need adjustment where adherence to the minimum structure gauge is essential or at tie points such as platforms and level crossings. Details of adjustments, which may be required, will be provided by the Supervisor.
- 4.7 The straight (through) line of a set shall normally be tamped first. Should it be necessary, to obtain the required standards, the curve butting to the turnout portion of a set, will be referenced by Transnet Freight Rail at 5m intervals. (The obtainable accuracy is influenced by the direction of travel during tamping, and this will only apply if the machine is working in the direction from ETO towards the crossing).
- Turnout sleepers longer than 3 meter must be supported on the far end during tamping.
- 4.8 Measurement of the standards of workmanship and accuracy for sets will be taken over the lengths shown in Appendix B.

4.9 The accuracy of contact wire height measurements shall be 10mm and contact wire stagger measurements shall be 20mm.

5 EVALUATION OF MACHINE PERFORMANCE

5.1 Machine performance will be evaluated by measurement of the track geometry behind the machine operation. Defective machine performance is indicated by a measurement that fails to meet the specified geometry standard i.e. a failed measurement.

5.2 The performance of the machine will be acceptable if the number of failed measurements does not exceed the specified number shown in Appendix C. Plain track and restricted track will for this purpose be divided into 500m sections, while sets will be measured as shown in Appendix B.

If the terms of clauses 4.2 exclude a portion of track from measurement or the 500m section is not complete (e.g. if a set occurs within the section) the tolerance will be reduced proportionally.

5.3 Should any geometry measurement exceed the C-standard or if the structure gauge be violated, the fault shall immediately be rectified by the machine.

5.4 The Supervisor's deputy will decide (before completion of the next 500m section or set) if re-tamping shall be done in case of non-conformance to clauses 5.2 or 5.3.

In all instances where re-tamping is required, the working time will not be added to the monthly total of Tw, for the duration of such re-tamping.

5.5 Should re-tamping according to clause 5.4 not be possible because of a lack of occupation time, then fifty percent of the Tw for the portion of track under consideration, taken at scheduled rates, will be subtracted from the monthly total of Tw.

5.6 The tachograph or event recorder will be marked and/or set and certified by the Supervisor's deputy to indicate:

- . sections that are double tamped (Twd),
- . where re-tamping was done (Tbr),
- . other tamping functions.

5.7 The Supervisor's deputy will do a daily check of the machine's performance in accordance with clause 3.1.2. Should any measurement deviate from the accepted standard, the machine will be non-available until the fault is corrected.

6 PLANNING

6.1 Normal Working.

The following will be determined and recorded jointly by the Supervisor's deputy and the Contractor at a monthly site meeting, scheduled to suit both parties as well as the turnout replacement Contractor:

- (a) The previous month's production and quantities for payment purposes.
- (b) The next month's detailed programme and the necessary inspections required.

- (c) What work will be part of the turnout replacement workload and what work will be separate from the turnout replacement project.
- (d) What role the tamper will play for each turnout replaced with the turnout replacement project.
- (e) What labour will support the tamper and for what action.
- (f) What labour support will be provided by who for any work not part of the turnout replacement workload.
- (g) Any material requirements e.g. turnout components, fastenings or ballast and who will deliver, control and install this.
- (h) Welding required.
- (i) Occupations.

6.1.1 The weekly progress and revisions to the monthly programme will be determined by the Supervisor's deputy and the turnout replacement Contractors representative and the Contractor's representative at a weekly site meeting. Decisions made will be recorded in a designated site book provided by the Contractor. The weekly site meeting may be held during occupation time, but must not interfere with working time required. (Tw)

6.2 Emergency Work

6.2.1 Transnet Freight Rail shall notify the Contractor, 3 months prior to Contractor's Annual Holidays, of the requirement of standby staff for emergency work during Contractor Annual Holidays.

6.2.2 When required, the Contractor shall supply standby staff (fitter, operator and plant assistant) for emergency work.

6.2.3 The Contractor shall supply 2 contact phone numbers for emergency call out purposes (the standby staff shall be available 24 hours a day, 7 days a week)

6.2.4 The call out reaction time shall not exceed 24 hours from time of the call out to the time the machine is at staging point. Consideration must be given in respect of the standby staff getting sufficient rest before commencing work.

6.2.5 The Contractor shall make the necessary arrangements for accommodation of standby staff and all costs shall be included in the rates tendered.

6.2.6 The mutually agreed time the machine shall be available at its staging point, shall be the start of the occupation time (To) for that contract, therefore arriving late shall be breakdown time (Tb)

6.2.7 An inconvenience allowance shall be paid per person per day for the duration of the Contractor's Annual Holidays whether working or on standby. This item shall include transport to be able to respond to the callout.

6.2.8 Travel allowance shall be paid per kilometre actually travelled by the standby vehicle during the Contractors Annual Holidays including travelling to respond to the call out. This item shall exclude travelling between temporary accommodation and work site as this shall included in the normal working rates.

7 RECTIFICATION

7.1 Where the C-standards are not attained before the end of an occupation (see clause 5.3), or should the Contractor damage the track or any visible equipment, the Supervisor may arrange to rectify such defects. Costs will be recovered from the Contractor, at Transnet Freight Rail's rates.

7.2 The Supervisor's deputy will check the condition of the bonds/cables at the end of each occupation, and should the condition or quality of weld not be acceptable, repairs shall be carried out at the expense of the Contractor responsible for the condition.

7.3 Transnet Freight Rail's rates will be as below, and will be subject to price adjustment described in clause 8.1 of the CONTRACT DATA. Labour rates will be enhanced by 33% for Saturdays, and 100% for Sundays and paid public holidays.

Artisan/Platelayer = R 100,00/hr
Skilled labour = R 70,00/hr
Unskilled labour = R 40,00/hr

L.D.V. = R 100,00/hr
Lorry = R 300,00/hr

} Excluding driver

Material prices will be determined as and when applicable, subject to a 25% mark-up.

8. TAMPING RATE

8.1 The tendered nominal production rate in sleepers/minute must be maintained over a calendar month.

8.2 The following definitions apply in this regard:

SA = The total number of sleepers actually tamped each month. (Excluding all sleepers tamped in turnouts)

Tw = Actual working time for tamping (minutes) per month excluding turnouts.

R = Nominal Tamping rate as tendered in the schedule of machines and as specified according to clause 3.1.2.

Tamping rate = $SA/Tw \geq R$

8.3 If the Technical Officer requires double tamping, the number of sleepers counted towards SA will be $0.75 \times S_d$, where S_d is the number of tachograph registrations for double tamping. This will only apply to double tamping of sections with more than 700 sleepers.

8.4 Sleepers tamped during turnout maintenance will not count towards the total for SA. The total Tamping time per month on turnouts in excess of that tendered for turnouts shall be counted as T_b . The tamping time spent on the tamping of a turnout will therefore have to be recorded together with the type of turnout for this purpose.

- 8.5 If the actual monthly tamping rate is slower than R, **the proportional part of Tw and To** linked to the tendered rate of production, will be multiplied with the ratio: $P = (\text{Actual tamping rate})/R = \text{Productivity factor}$. (The proportional part is the portion of Tw time worked requiring standard tendered production rates / total time worked.) (Tw not linked to the production factor will be considered as $P = 1$)
- 8.6 The tamping rate shall be maintained at R plus or minus 3 sleepers/minute at all times during tamping. The nominal tamping rate and times for tamping of sets will be taken in consideration during adjudication of the tenders.
- 8.7 Tamping time of sets.
- 8.7.1 The joints or thermit welds at the stock rail joint (SRJ), end of set (ES) and end of turnout (ETO) will be regarded as the extremities of the turnout for the scheduled working time required to tamp turnouts as well as for payment purposes.
- 8.7.2 Quoted times for tamping of sets shall be for one pass of the complete set (through straight as well as turnout lines simultaneously).
9. WORKING IN OF TB (BREAKDOWN TIME)
- 9.1 All breakdown time Tb shall recorded at all times.
- 9.2 Only a maximum 5% of the actual worked Tw time will be allowed to be worked in exchange for recorded Tb time. The time worked in can be either for :
- 9.2.1 Actual overtime worked in and certified as time worked in against Tb, and or
- The Technical Officers deputy (Track Inspector or Track Master) will only allow working in of time for Tb if he can arrange and reach agreement with the sections controlling operations centre. This may only be when train service allows planned occupations to be extended.)
 - Overtime worked because of planned longer hours working for production reasons or for allowance of late starting of work due to late train service, cannot be exchanged for Tb
- 9.2.2 Productivity of the Tw worked in excess of 100% of Normal Tamping only. The rate of tamping must be constantly monitored to ensure a correct standard of working to ensure proper compaction of ballast and filling of ballast boxes. If in the opinion of the Technical Officers deputy the standard of work is not acceptable he may insist that the rate of tamping be reduced to ensure the quality of work.
No time will be allowed to be exchanged for higher productivity worked than that tendered for other types of work such as:
- Turnout tamping
 - Double tamping
 - Restricted track tamping
- (Restricted Track tamping is normally measure at a productivity factor of 1)

Example: This implies that where 80 hours Tw was worked for the month on normal tamping and no overtime worked in and productivity was calculated as 1.06 or 106%, only 5% of the 80 hours reduction can be calculated towards reduction of the Tb for the month.

- 9.2.3 Tb can also be waived for work in excess of 100 hours Tw per month as specified elsewhere in the project specifications.
- 9.3 Each month shall be calculated separately. Time can be saved up ahead for the month worked and not for any future months.
- 9.4 Breakdown time Tb can only be exchanged if a certificate is supplied for the working in of time for break down time. This also implies that recorded overtime cannot be directly exchanged for breakdown time.
- 9.5 No other agreement exist for the exchange of productivity above 1 to be exchanged for Tb
- 9.6 This implies that payment certificates must be adjusted to show deductions of Tb for time which Technical Officers deputies certify was worked in to for Tb, as well as time exchanged for productivity higher than 1 up to a maximum of 5% of Tw worked. Such deductions may also only be done at the end of the month if it is certified as time worked in or if it is exchanged time as per above.

10. Rail Wagons

1. Rail Wagons, provided by Transnet or the contractor, are not intended to be provided or used for On Track Machine contracts in future accept where wagons are essential for the functioning of a contract or where, according to the Transnet it is considered justifiable to us rail wagons. The following different conditions may apply or situations may justify the use of rail wagons:
- a) Wagons required as part of work group:
Wagons considered being part of a work train and essential for the execution of the contract. Examples of such wagons.
- ii. Wagons forming part of the basic machine such as spoil removal wagons or material wagons as part of machine process.
 - iii. Match wagon with Spoil removal wagons
 - iv. Wagons to move support machines with eg. Screener package
 - v. Water tankers or wagons for dust suppression with contracts such as screener packages.
 - vi. Any other critically required wagon specifically being part of a machine package. (Tenderers to clearly specify what wagon and for what critical process used as well as consequence if wagon is not available.)

b) Wagons required but not absolutely essential

Wagons that may be critically important for the execution of the contract but can be replaced by road transport at relatively high cost and or effectiveness. Any such wagons if provided or allowed as part of the contract shall under all circumstances be limited to a number together with the wagons of the work group wagons as per paragraph a) above be limited to that which can be hauled as one train by one 37 class diesel locomotive or equivalent loco when moving camp. Examples of such wagons are:

- i. Fuel bowser wagon with large machine contracts such as screener packages.
- ii. Storage wagons for machine parts such as screener cutter bar, and parts of large contracts.
- iii. Critical accommodation wagons with a contract such as:
 1. Caboose on grinder as part of grinder.
 2. Wagon or caboose for guards with train to ensure security of machine group when moving, stopping and when staged.
- iv. Any other critically required wagon specifically being part of a machine package. (Tenderers to clearly specify what wagon and for what critical process used as well as consequence if wagon is not available.)

c) Transition period for wagons in use:

This shall include wagons that are required for a follow up contract to continue working. Such wagons may form part of the non – essential group of wagons that are required for an interim period, on a follow up contract for a transition period until such time as when other alternative housing and or vehicles and other equipment can be provided to replace accommodation wagons.

Tenderers shall list and define these wagons and qualify tenders stating when they can be replaced and what the difference in costs shall be at the date at which the replacement will occur.

d) Cost of wagons:

Tenderer are required to clarify tenders to clearly indicate what has been allowed for and the difference in cost to Transnet of all possible options included in the pricing for any of the following or any other allowed for wagon usage options allowed for in the submitted tenders:

- i) Transition period non essential wagons: Cost of wagons as per qualified list, if continued to be supplied and maintained by Transnet as on previous similar contract. (Transition period only)
- ii) Transition period non essential wagons: Cost of wagons as per qualified list, if continued to be supplied by Transnet as on previous similar contract, but wagons be maintained by contractor, excluding wheel replacement or wheel cutting. (Transition period only)
- iii) Essential critical wagons: Wagons supplied and maintained by contractor.
- iv) Essential critical wagons: Wagons supplied by Transnet and maintained by contractor, the cost of maintenance arranged by the contractor may be paid for by:
 - An allowance by the contractor and included as part of price tendered, or
 - Allowing for a provisional lump sum in the contract and paid for by Transnet on approved invoice.

- e) This clause on wagon usage shall replace any other reference to the supply or use of wagons mentioned or specified elsewhere in this specification.
- f) Tenderers may offer different options to Transnet for where wagons are considered essential to execute the contract.
- g) All wagon required shall be clearly qualified in an annexure covering wagon requirements.

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Track Geometry Measurements

Number of permissible disallowed measurements

Before train traffic Under a train

Type	Position	Method	Frequency	Before train traffic		Under a train		A Standard	B Standard	C Standard	Unit
				500m sections	Each set	500m sections	Each set				
<u>VERTICAL PLANE</u>											
TOP	All track	Geismar	Any position	3	1	3	1	1:1000	1:250	1:180	-
CANT	All track	Geismar	5m intervals	10	10%	3	10%	3	12	16	mm
TWIST	Transition curves	Calculated from cant	5m intervals	5	10%	3	10%	1:500 (" 10)	1:400 (" 12,5)	1:288 (" 17,5)	- mm
TWIST	All other track	Calculated from cant	5m intervals	5	10%	3	10%	1:1000 (" 5)	1:400 (" 12,5)	1:288 (" 17,5)	- mm
<u>HORIZONTAL PLANE</u>											
VERSINE	<u>Curves</u> :	10m chord	5m intervals	8	10%	-	-	2,5 mm + 5% of the correct/ave. versine.	2,5 mm + 20% of the correct/ave. versine	2,5 mm + 30% of the correct/ave. versine	mm
LINE	<u>Tangent track</u> :										
	All	10m chord	any deviation	8	10%			1:2000	1:500	1:360	-
	Between beacons	70 - 250m optical baseline	1/instrument setup	0	0	-	-	1:5000	n.a.	n.a.	-
CURVE LOCATION	Curve markers Longitudinal Transverse	Survey	4 each curve	-	-	-	-				

* These standards are the difference between specified (design) and actual measurements, except for TWIST, which are absolute values.

* Sets will be measured for TOP, CANT, TWIST and LINE at the positions indicated in Appendix B.

